

Abstract of the Disclosure

A semiconductor cleaning apparatus and a method of cleaning a wafer surface using the semiconductor cleaning apparatus are provided. In the semiconductor cleaning apparatus, wastewater is easily treated, the consumption of chemical usage is considerably reduced, and a contaminant removal efficiency on the wafer surface is maximized even at a room temperature or a low temperature by using a mixed chemical solution composed of an aqueous ammonium hydroxide and ozone as a cleaning solution in cleaning the wafer surface. In the method of cleaning the wafer surface, a cleaning solution is formed in a mixing tank by adding ozone to aqueous ammonium hydroxide. The cleaning solution is supplied into a cleaning bath through a filter for removing ozone bubble. Megasonic power is applied to the cleaning solution in the cleaning bath using a megasonic transducer. A wafer dipped in the cleaning solution which is at a room temperature to remove the contaminants on wafer surface.